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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,869	12/19/2001	Rene Jean Zimmer	DN2001205	3717

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THE GOODYEAR TIRE & RUBBER COMPANY
INTELLECTUAL PROPERTY DEPARTMENT 823
1144 EAST MARKET STREET
AKRON, OH 44316-0001

EXAMINER

MAKI, STEVEN D

ART UNIT PAPER NUMBER

1733

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/024,869

Applicant(s)

ZIMMER ET AL.

Examiner

Steven D. Maki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1) **In view of newly cited US 4,284,302 to Drews, the finality of the rejection of the last Office action is withdrawn.** Rejections using Drews 302 are set forth below:

2) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3) Claims 2 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 describes "said acute angle". It is unclear which of the two acute angles described in claim 1 is between and 15 and 55 degrees as described in claim 2.

In claim 15, there is no antecedent basis for "the lettering of the tire". In claim 15, it is suggested to change "the lettering" to --lettering--.

4) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Drews (sidewall)

5) **Claims 1, 2, 4-9, 14-15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drews 302 (US 4284302) in view of Fronek et al (US 5848769) and optionally Drews 290 (US 4180290).**

This rejection is applied because Drews 302 teaches providing projections on a tire sidewall and forming the projections so as to be undercut and sizing the projections such that the projections are microscopic.

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Drews 302 discloses a tire 11 being formed of rubber and comprising sidewalls. See col. 5 lines 12-17. Hence, Drews 302 teaches a tire having a plurality of radially outer rubber components (a tire having rubber sidewalls). **Drews 302 teaches providing the sidewalls of the tire with undercut projections (undercut wave shaped flutes 9) to minimize friction and drag forces caused by the movement of the tire through air.** See figures 1-6, especially figure 4. As can be seen from figure 4, each projection (flute 9) has an apex, a first side and a second side wherein (a) the first side of the projection (flute 9) is longer than the second side and (b) the second side forms an undercut extending beneath the apex. With respect to the flute being undercut, Drews 302 illustrates the projection (flute) as being **undercut**. See for example figure 4. Also, Drews 302 refers to his previous application 798,417 now US 4180290. Drews 290 (US 4180290) more clearly indicates that the flutes are **undercut**. See col. 3 lines 28-45 and figure 4 of Drews 290. The first side and second side of the projection (flute 9) is illustrated in figure 4 as defining an acute angle alpha of about 40 degrees (falling within the claimed range of 5 to 60 degrees). With respect to the limitation of more than 75% of the projections, any plane tangent to the first side of 100% of the undercut projections of Drews 302 cut the radially outer surface at an acute angle as claimed. As to height, Drews 302 states:

...the fluted members ... on the order to 1/16 to 1/8 inch [1588 to 3175 micrometers] may provide the desired interaction. The size may be significantly smaller and in some cases may advantageously be microscopic (col. 8 lines 28-32, emphasis added).

Drews 302 does not specifically recite the projections as having a height of 0.2 to 100 micrometers.

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As to claim 1, it would have been obvious to one of ordinary skill in the art to provide the undercut projections of Drefs 302 on a rubber sidewall such that the long first side and short second side define an angle alpha of 5-60 degrees and have a height of 0.2 to 100 micrometers since (1) Drefs 302 teaches forming undercut projections on the rubber sidewall of a tire such that the long side and short side define a relatively small acute angle (figure 4 illustrating an angle of about 40 degrees) and have a size which is microscopic; (2) Drefs 302 teaches that the undercut projections *minimize friction and drag forces*; and (3) Fronek et al suggests providing projections *for reducing drag* with a height of about 10 to 250 micrometers (col. 6 line 26-49). No unexpected results over the above applied prior art has been shown.

As to the dependent claims: As to claims 2 and 4-9, the claimed characteristics of the projections would have been obvious in view of the shape and arrangement of the projections (flutes 9) shown by Drefs 302 / Fronek et al's teachings for example at col. 6 as to suitable characteristics for projections, which like those of Drefs 302 are for reducing drag. It is noted that Drefs 302's illustrated asymmetrically shaped undercut projections, which are at a spacing of zero micrometers, have curved sides and define acute angles and that the radial alignment of Drefs 302's projections (figure 5) cause neighboring projections to be non-parallel and define with each other a very small acute angle. It is noted that Fronek et al suggests a spacing of 10-250 micrometers, varying height and varying included angles. As to claims 14-15, Drefs 302 teaches providing the sidewall of a tire with the projections (flutes). As to claim 18, one of ordinary skill in the art would readily understand that Drefs 302's rubber tire is vulcanized.

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6) Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drews 302 in view of Fronek et al and optionally Drews 290 as applied above and further in view of Rethorst (US 3523661).

As to claim 3, it would have been obvious to provide Drews 302's undercut projections for reducing drag with a rounded apex as claimed in view of Rethorst's suggestion to round the apex 22 of an undercut projection for reducing drag.

7) Claims 10-13, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drews 302 in view of Fronek et al and optionally Drews 290 as applied above and further in view of Heinen (GB 2363100 or US 6415835) or Ohsawa (US 2001/0032691).

As to claims 10-13, it would have been obvious to provide Drews 302's tire with grooves and provide Drews 302's undercut projections in the grooves since (1) Drews 302 suggests providing the undercut projections on all exterior surfaces exposed to air (fluid) so as to reduce drag and (2) Heinen or Ohsawa suggest providing a tire with grooves in a tread to improve wet traction and provide projections in the grooves so as to reduce resistance to water flow.

As to claims 16 and 18, it would have been obvious to one of ordinary skill in the art to provide the claimed mold for the tire suggested by Drews 302 and Fronek et al in view of Ohsawa's teaching to use a vulcanizing mold to form a tire having projections in the micrometer range. See for example paragraph 209. One of ordinary skill in the art would readily understand that the mold has surfaces corresponding to the projections so that an actual tire having such projections can be vulcanized.

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8) Claims 15, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drews 302 in view of Fronek et al and optionally Drews 290 as applied above and further in view of Kemp et al (US 6253815).

As to claims 16 and 18, it would have been obvious to one of ordinary skill in the art to provide the claimed mold for the tire suggested by Drews 302 and Fronek et al in view of Kemp et al's teaching to provide a mold having surfaces for curing (vulcanizing) a tire having projections wherein the shape of the surfaces correspond to the shape of the projections. See col. 10 lines 24-36 of Kemp et al.

As to claim 15, the claimed limitation regarding "lettering" would have been obvious since (1) Drews teaches using microscopic projections on the sidewall of a tire and (2) Kemp, which teaches projections having a size such as 250 micrometers to reflect light and improve visibility of indicia, suggests forming letters on the sidewall of a tire.

9) Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drews 302 in view of Fronek et al and optionally Drews 290 as applied above and further in view of Japan 219 (JP 6-40219) or Baker (US 5603796).

As to claim 17, it would have been obvious to make a rubber tire using a tape having projections and an adhering step as claimed in view of (1) Drews 302's teaching to provide the sidewall of a tire formed of rubber with projections, (2) Drews 302's teaching that projections may be provided on a surface by adhering a tape having the projections to the surface (col. 5 lines 40-52) and (3) (a) Japan 219's teaching that a tape (annular sticker) may be adhered to the sidewall of a pneumatic tire (vulcanized

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rubber tire) or (b) Baker's teaching to bond a tape (applique with recesses) to a vulcanized tire.

tread

10) **Claims 1-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa (US 2001/0032691) in view of at least one of Lobert et al (US 4750693), Drews 302 and Drews 290 and optionally in view of Japan '135 (JP 11-59135).**

This rejection is applied since Ohsawa teaches providing projections in a groove of a tire tread and providing the projections with a height of 10-500 micrometers such as 50 micrometers (falling within the claimed range of 0.2-100 micrometers) and using the projections to reduce resistance between the groove surfaces and water.

Ohsawa discloses a tire having grooves wherein projections are provided on the sidewalls of the groove. The projections have a depth (height) of 0.01-0.5 mm (10 to 500 micrometers) such as 0.05 mm (50 micrometers). The projections reduce resistance to the flow of water in the grooves to improve drainage efficiency of the grooves. Ohsawa teaches "... a number of minute vortexes can be generated along the groove walls to reduce the frictional resistance between the water and the groove walls thereby to improve the wet performances at an actual running time" (paragraph 14). The pitch P of the projections is less than or equal to two times the depth D. See paragraph 27. Ohsawa's teaching to use $P \leq 2D$ strongly suggests using an angle within the claimed range of 5 to 60 degrees. For example: In the tire of Example 1 in which $P = D$, an angle I of 53.2 degrees is defined. Another example: In the tire g of

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Table 1 in which $P = 0.75 D$, an angle of 41.1 degrees is defined. With respect to the determination of Ohsawa's acute angle, see pages 3 and 4 of office action dated 5-18-04. At paragraph 23, Ohsawa teaches that asymmetrically shaped grooves, which define asymmetrically shaped projections, may be used. At paragraph 164, Ohsawa teaches that other shapes may be used for the smaller grooves defining the projections "if they have the effect to reduce the resistance to the water flow". Ohsawa does not recite using undercut projections.

As to claim 1 (tire), it would have been obvious to one of ordinary skill in the art to configure Ohsawa's projections such that

- the projection is undercut,
- the projection has two sides of unequal length and is thereby asymmetrical,
- and
- defines define an angle alpha of 5-60 degrees (a relatively small acute angle)

since (1) Ohsawa, directed to the problem of reducing resistance of water flow, teaches forming projections with a desired shape (e.g. an asymmetrical shape) such that the pitch is less than two times the depth and so that resistance to flow of water is reduced, (2) at least one of Lobert et al, Drews 302 and Drews 290 suggest forming projections for reducing resistance to fluid flow such that the projections are undercut and optionally (3) Japan '135 shows one of ordinary skill in the a tire art that undercut projections may be formed in grooves of a tire tread (see figure 3). Lobert et al, directed to reducing drag between a moving body and a flowing medium such as water, teaches using an undercut asymmetrical shape (figure 4b) for projections for reducing resistance to a

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flowing medium. Lobert et al suggests using asymmetrically shaped undercut projections as an alternative to asymmetrical projections, which are not undercut. Lobert et al is reasonably pertinent to the problem faced by Ohsawa. Both Ohsawa and Lobert et al are directed to the same problem of reducing friction between fluid and a surface. Both Ohsawa and Lobert et al use the same solution (small asymmetrically shaped projections having a height in the micrometer range) to reduce friction between water and a surface. Drews 302 and Drews 290, discussed above, are reasonably pertinent to the problem faced by Ohsawa. Ohsawa, Drews 302 and Drews 290 are directed to the same problem of reducing friction between fluid and a surface. Both Ohsawa and Drews 302 use the same solution (small asymmetrically shaped projections having a height in the micrometer range) to reduce friction between fluid and a surface. Moreover, Ohsawa, Drews 302 and Drews 290 are in the same field of endeavor - tires. The optionally applied Japan 135 is evidence that undercut projections may be used in a tread groove. No unexpected results over the applied prior art has been shown.

As to claim 16 (mold), Ohsawa teaches using a vulcanizing mold. See for example paragraph 209. One of ordinary skill in the art would readily understand that the mold has surfaces corresponding to the projections so that an actual tire having such projections can be vulcanized.

As to the dependent claims: As to claim 2, the claimed angle of 15-55 degrees would have been obvious in view of Ohsawa's teaching to form projections with a pitch less than two times the depth to reduce resistance to flow and the suggestion from at

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least one of Lobert et al, Drefs 302 and Drefs 290 to undercut asymmetrically shaped projections to reduce resistance to fluid flow. As to claims 3 and 4, the limitation of curved line apexes / tangent at height not exceeding 75% of the total height would have been obvious since Ohsawa suggests that the peaks of the projections may be curved (see e.g. figure 9). As to claim 5, the claimed non-zero angle β being between -15 degrees and +15 degrees would have been obvious in view of Ohsawa's suggestion to use grooves to define projections and Ohsawa's teaching that the grooves may be inclined and non-parallel (figure 22). As to claim 6 (distance d being 0-100 micrometers), note the spacing of the projections disclosed by Ohsawa (the spacing in figure 3 for example is zero micrometers). As to claim 7, the limitation of the sides being slightly curved would have been obvious since Ohsawa suggests that the sides of the projections may be curved (see e.g. figure 9). As to claim 8, the claimed varying angle α would have been obvious in view of Ohsawa's suggestion to vary angle θ_1 (figure 15) so that the tire can easily be removed from the mold. As to claim 9, the claimed varying height would have been obvious since Ohsawa shows varying height (figure 15) so that the tire can easily be removed from the mold. As to claims 10-13, Ohsawa teaches providing the projections in a groove of a tread (e.g. on the sidewalls and bottom of a groove). As to claim 14, Ohsawa's tire includes rubber sidewalls. As to claim 15, the description of "lettering" fails to require structure different from that disclosed in Ohsawa. As to claim 18 (vulcanizing tire), Ohsawa as noted above teaches using a vulcanizing mold to form the tire.

Remarks

11) Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 6-20-05 have been fully considered but they are not persuasive.

Applicant states "For the examiner's rejection to be appropriate, the combination of references must teach and show each claimed element and there must be some teaching or suggestion within the references themselves that would instruct one skilled in the art *faced with the problems listed above* (emphasis added) to make the proposed modification and combination of selected elements" (page 2 of response filed 6-20-05, emphasis in original). First: Applicant has provided no authority supporting this statement. Second: "The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant." MPEP 2144, page 2100-134, Rev. 2, May 2004.

Page 3 of the response filed 6-20-05 states: "The unexpected results of the subject invention is to solve simultaneously the need for improving hydroplaning reduction, optical and color differentiation, and a reduction in dirt collection with the channels". Arguments based on this statement are not persuasive because attorney arguments cannot take the place of evidence. See MPEP 716.01(c), page 700-256, Rev. 2, May 2004.

Page 3 of response filed 6-20-05 states: "The undercut defines a channel for the purpose of contained channeling of water between the shorter projection side and the surface from which the projection extends". Arguments based on this statement are not persuasive because attorney arguments cannot take the place of evidence. See MPEP 716.01(c), page 700-256, Rev. 2, May 2004.

Pages 7 and 10 of response filed 6-20-05 state: "The unexpected results achieved by the present claimed invention is the use of undercut projections that not only provide a well-defined channel to move water away from the tire surfaces prone to hydroplaning, but also for accomplishing the ancillary purposes of providing for enhanced optical and color capability through variations in the angle of such projections and/or the angle between neighboring projections." Arguments based on this statement are not persuasive because attorney arguments cannot take the place of evidence. See MPEP 716.01(c), page 700-256, Rev. 2, May 2004.

Page 10 of response filed 6-20-05 states "... the invention teaches projections that are angled to an apex at variable angles to achieve color differentiation and optical performance." Arguments based on this statement are not persuasive because attorney arguments cannot take the place of evidence. See MPEP 716.01(c), page 700-256, Rev. 2, May 2004.

Applicant argues that Lobert et al's sole objection is to reduce or eliminate friction whereas the present invention is to enhance friction between the surface of the tire and the road. This argument is not persuasive since (1) applicant fails to address Ohsawa's teaching to use the small projections to reduce frictional resistance between water and

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the groove walls and (2) each of applicant, Ohsawa and Lobert et al use small projections having a height in the micrometer range to reduce friction between water and a surface (see paragraph 16 of applicant's specification, paragraph 14 of Ohsawa and col. 1 lines 5-10, col. 8 lines 8-9 of Lobert et al). Furthermore, applicant's projections fail to increase friction resistance. In contrast, applicant's projections reduce friction resistance. See lines 1-3 in paragraph 16 on page 3 of the original disclosure.

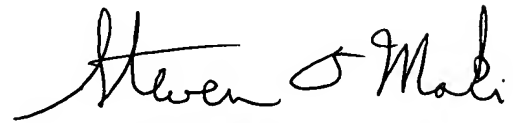
12) No claim is allowed.

13) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
July 2, 2005


STEVEN D. MAKI 7-2-05
PRIMARY EXAMINER
~~GROUP 1300~~
Av. 1733